

MARINE BORERS

A Survey and Illustrated Catalogue of the Terebinidae (Mollusca : Bivalvia)

By Ruth D. Turner. Pp. vii + 265 (64 plates). (Cambridge, Mass.: The Museum of Comparative Zoology, Harvard University, 1966.) \$8.

FROM the moment that seafaring man started to use wood for his boats and piers, shipworms demanded attention on account of their unseen but devastating effects, and when later he became a scientist they aroused admiration because of their unique adaptive features. Yet the systematics of the family Terebinidae have remained in a state of confusion. This is partly a result of the erroneous creation of new species from fragments of moribund or dried remains found in drift-wood or ships from distant water, and of the fact that no comprehensive study of the family has until recently been undertaken. Dr. Turner has now marshalled information from libraries and museums over the world and examined all available material.

The results presented in the first part of the book include illustrated descriptions of the gross anatomy of the soft parts of fourteen genera of the family; these prove to be important in classification. There are also drawings and descriptions of the valves, tubes and pallets on which the diagnosis of both living and fossil species is based. The genera are redefined and a key is compiled for the identification of fresh or well-preserved adult specimens which is easy to use and will minimize one of the most formidable tasks of those working on terebinde borers. Moreover, the second part of the book eases the systematist's problems, for it comprises a catalogue of all the generic and specific names which have been used in the family, with their original citation, type locality and the location of the type specimen; the present status of the name is indicated wherever possible.

The author points out that this is a preliminary survey and indicates a number of lines of research for the systematist, physiologist or ecologist who is interested in shipworms. Much-needed monographic studies of the various genera are now being planned.

V. FRETTER

CYTOPHOTOMETRY AND INTERFERENCE MICROSCOPY

Methoden und Ergebnisse der Zytphotometrie und Interferenzmikroskopie

Herausgegeben von Walter Sandritter und Günter Kiefer. (Acta Histochemica: Zeitschrift für Histologische Topochemie, Supplementband 6. Herausgegeben von Hermann Voss, Gerhard E. Vogt und Joachim-Hermann Scharf.) Pp. 459. (Jena: Gustav Fischer Verlag, 1965.) 99.30 MDN.

THE collection of sixty-six papers presented at the ninth symposium of the very active Gesellschaft für Histochemie is a mine of interesting and stimulating information. The volume consists of two parts: the first deals with cytophotometry, the second with interference microscopy. Each part is subdivided into a description of instruments, their parts and arising problems, inevitable errors and results obtained in histochemistry. Each paper is supplemented with a bibliography and a critical discussion by the present participants.

Quantitative histochemistry is growing rapidly and instruments for physico-optical investigations were the prevailing topic of the symposium. Caspersson presented a new universal microspectrograph, where X-rays, ultra-violet, visible and infra-red light could be used. Unfortunately, instruments of this kind are very complicated and expensive; their equivalents in different laboratories are often inadequate. Caspersson suggested

that laboratories should be specialized and planned on the national, or even international, scale. Sandritter assembled a list of chemical components present in cells, which could be localized and estimated quantitatively with physico-chemical methods. The list is supported with references and a description and bibliography of new instruments designed for this purpose. Thorell analysed microspectrographically the respiratory system of the cell and defined the metabolic state from an area of 1.5 μm diameter in a single intact cell. The problem of measuring the thickness of a section is important in quantitative investigations. Hallén re-examined this old subject and came to the sad conclusion: "The only way to avoid the error is to avoid sectioned material". Fluorescence microscopy combined with photometry was the subject of several papers (Ruch, West and others). The method is particularly useful, as the fluorescent spectrum is proportional with respect to concentration of the examined material within the living or fixed cell.

The complexity of physico-optical methods is often the source of errors. There are a few important papers dealing with this problem. Sandritter and Schlütter, for example, pointed out the significance of the depth of the field. Changing the depth or defocusing produces differences in value as much as up to 45-55 per cent. On the other hand, a comparison of results obtained from the literature dealing with interference microscopy, X-ray and chemical estimation showed that the values of measured dry mass differ by only about 15 per cent (Sandritter). Cytophotometry of DNA, RNA and proteins of normal and malignant cells, stained with Feulgen, galocyanin or other methods, is the subject of several other papers.

In a short review it is impossible to mention everything, particularly when the specification of the instruments is concerned. The book can be recommended for all interested in physical methods applied to histochemistry.

J. KRUSZYNSKI

MICRO TO ULTRA-MICRO

Introduction to Quantitative Ultramicroanalysis

By I. M. Korenman. Translated by Scripta Technica, Inc. Translation edited by Ronald Belcher. Pp. ix + 234. (New York: Academic Press Inc.; London: Academic Press, Inc. (London), Ltd., 1965.) \$9.50.

Submicro Methods of Organic Analysis

By Ronald Belcher. Pp. ix + 173. (Amsterdam, London and New York: Elsevier Publishing Company, 1966.) 55s.

BY title these two books are complementary and they do, indeed, give a good account of the present state of ultra-microanalysis. At first sight they appear to be quite different in approach and in the fields which they cover, but closer examination shows that this is more apparent than real. It is the result of the historical fact that although in the inorganic field methods which can be classed as ultra-microanalysis were used in the nineteenth century in inorganic chemistry, and have been increasingly studied since the early thirties, the much more exacting field of organic ultra-microanalysis has only been attacked relatively recently. The result is that Prof. Korenman's book, which in fact is inorganic, is an account of the work of a very large number of workers who have contributed considerably in important ways, and who include Korenman himself, Alimarin and Benedetti-Pichler.

Organic ultra-microanalysis, on the other hand, has mainly been developed by one school of analytical chemistry so that Prof. Belcher's book is in effect an account of one compact line of research, largely emanating from a single school. But it gives as fair an account of the present state of organic ultra-microanalysis as does Prof. Korenman's book in the inorganic field.